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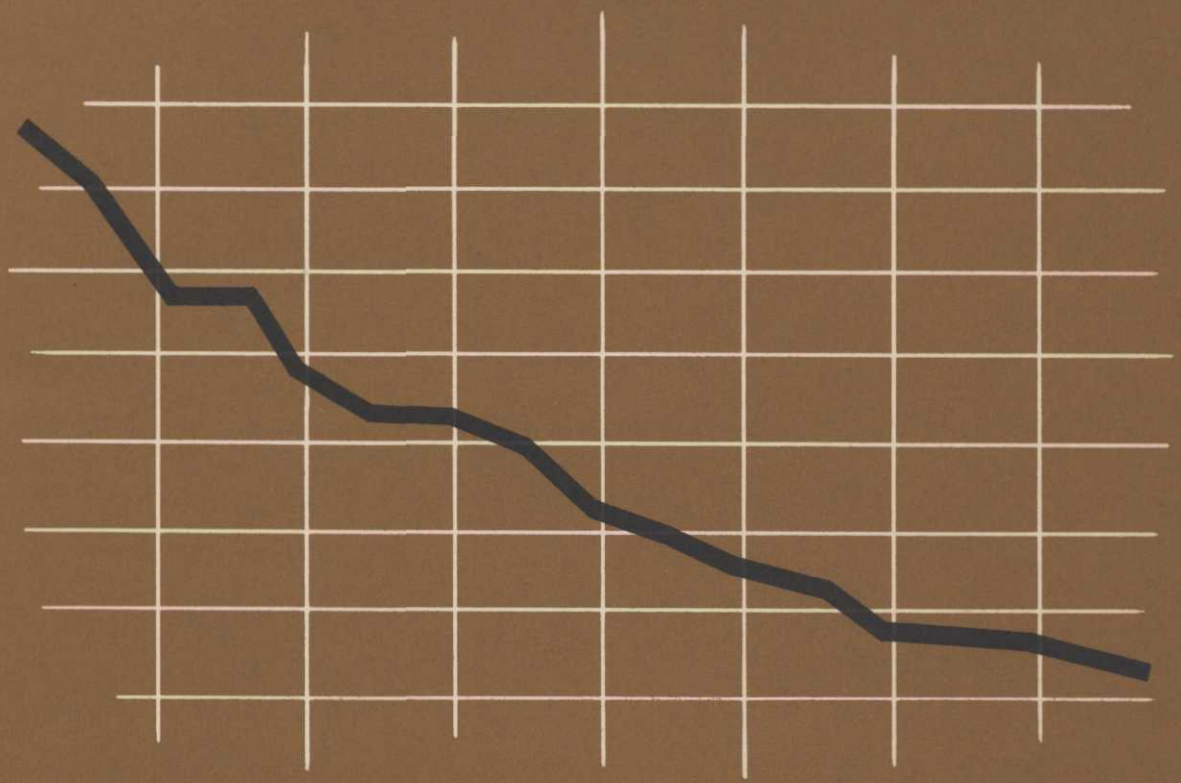
SAFETY PROGRAM



United States Steel

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SAFETY PROGRAM

"... management—top management—must have strong convictions on the necessity for placing safety first, above all other business considerations. They must work at the job of translating and communicating those convictions into policies and actions, and expressed views, so that the entire organization is aware of safety's fundamental importance within that company."

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United States Steel's Safety Heritage

A Statement by
LESLIE B. WORTHINGTON, *President*
United States Steel Corporation

ANY DISCUSSION OF SAFETY in U. S. Steel has to begin with Judge Elbert H. Gary, first Chairman of the Board. If you know or have read anything about the Judge, you are aware that he brought to industry a set of high standards and some ideas which, in his day, were quite new.

For example, he believed firmly in the public responsibility of large corporations. He was a leader in instituting welfare and safety programs for the betterment of working conditions. Among the now widely known "Gary Principles" was one which stated his belief that "no industry can permanently succeed that does not treat its employees equitably and humanely".

Generally speaking, the policies established then remain substantially in effect today. U. S. Steel continues to place great emphasis on responsible management, recognizing its importance to the well-being and continuity of our Corporation.

As stated more recently in our Creed of Human Relations, "We believe in the dignity and importance of the individual employee and in his right to derive personal satisfaction from his employment". Also spelled out in this Creed is our belief that "The safety of employees continues to be the first consideration in the operation of the business".

Those of us now charged with managing the affairs and the facilities of U. S. Steel recognize that we enjoy a rich safety heritage—a heritage that includes the dedicated work of such safety pioneers as Charles L. Close. We take pride in the role played by Charlie Close and other U. S. Steel people in helping to form the National Safety Council half a century ago.

We are proud that one of our predecessor companies originated the phrase, "Safety First". Incidentally, that phrase remains today as the cardinal factor that governs our total approach to safety in U. S. Steel.

We are aware that the precedent for engineering safety into our facilities and processes, and for correcting hazards promptly without regard to cost, was established coincidentally with the first direct efforts to reduce hazards and increase safety within our mills and operations.

So you can see that our Safety Program has been a long time in the making, and that it was founded on a very sound base. As that Program is described in this booklet, it will become evident, I am sure, that it is backed by a great weight of experience built up through an hour-by-hour, day-by-day effort to find the ultimate key to eliminating all injuries, which is the goal of every safety effort.

May I say at this point that my use of the pronoun "we" is not a reference to safety and other management people alone. To the

greatest extent possible, we have always tried to make safety a cooperative effort between the employees and the management of U. S. Steel.

There is probably no more crucial part of any safety program, however, than that of selling it to the men and women it is designed to benefit. We came to the conclusion long ago in U. S. Steel that there are many paths which lead in this direction. Listing them presents a real hazard, if you will pardon the use of a key safety word, for whichever is mentioned first may be interpreted as being first in importance, while, in reality, they are all important.

Certainly, there has to be a deep and abiding conviction that a company's first responsibility is for the safety of its people. I doubt that any company ever made significant safety progress just by being "interested in" or "concerned about" safety, as we often hear it expressed.

Rather, management—top management—must have strong convictions on the necessity for placing safety first, above all other business considerations. They must work at the job of translating and communicating those convictions into policies and actions, and expressed views, so that the entire organization is aware of safety's fundamental importance within that company.

This is why, as I mentioned earlier, we continue to stress frequently the idea of "Safety First". I doubt that a day passes without this idea being expressed a number of times, and in a variety of ways, during contacts between members of management, and between management and employees. I often do it myself.

E. H. Gott, U. S. Steel's Executive Vice President-Production, is responsible for all of our domestic steel production facilities, from raw materials through the steel producing operations and including such divisional activities as American Bridge. At a recent meeting of his principal associates in Production, he expressed the idea this way:

> *"Safety is the first responsibility of every member of management in the Production Department of United States Steel. . . . Safety is our responsibility in management. Without question, it is our number one responsibility, taking precedence over everything else."*

I don't believe you can state it any plainer than that. And I repeat, we try to express this idea as emphatically and as frequently as possible. We want every member of management, every employee, to know unmistakably that safety is the first consideration on every job in U. S. Steel.

Mr. Gott's statement includes another element of our safety philosophy—our belief that safety is and must be a management responsibility.

While the ultimate success of our Safety Program depends on the full cooperation of each individual employee, we believe it is management's responsibility to see that there is a safe working environment at all times. And when we talk of environment, we are talking about things that require management decisions and actions —expenditures for better and safer equipment, for correcting a newly discovered hazard, for making available protective apparel where it is required. It is likewise management's responsibility to see that safety rules and procedures are adequate and enforced—to see that effective training and education programs are developed and used to best advantage.

These are responsibilities of management, and they cannot be delegated to non-managers any more than we can delegate final responsibility for such other elements of business as product development, research, or our financial soundness. If safety is to have stature to the same degree as quality and efficiency and low costs, then every manager along the line must be held responsible and accountable for the safety performance turned in by the people he supervises.

If our approach to safety has seemed relatively simple and basic up to this point, let me mention another element—one that has created particular problems for us. It is the wide diversity in the types of jobs our people perform and the broad range of working environments that are encompassed in our operations.

Almost every general classification of skills and professions is represented in some way, somewhere within U. S. Steel. We have carpenters, machinists, and maintenance people of all kinds. There are jobs that take our people down into the depths of the earth in mining, while others work high above the ground, as in the case of bridge and other construction.

We have people who operate and work with massive equipment, such as rolling mills where steel moves along at super-highway speeds. We have people who use pneumatic hammers, and rammers, and impact wrenches.

Some of our people are engaged in automotive, railroad, and

over-the-water transportation. We even have a few who pilot aircraft in and out of the nation's busiest airports.

If you examine all of these jobs, you will find that the ingredients exist for almost every known industrial hazard. We work with molten metal, and occasionally must use corrosive and caustic substances. There are extremes of heat and cold, and liquids and gases under pressure. There are flammable materials, as well as explosives that range from blasting caps to jet tappers designed to open the tap hole of an open hearth furnace.

We experience the safety problems associated with job monotony. On the other hand, we must combat the hazards that can arise when a research scientist creates an entirely new situation in the confines of a laboratory.

And to compound the matter still more, any number and combination of these jobs and situations may be grouped together. Our facilities range from mills employing thousands, to service centers and oil country stores where there may be only a handful of employees.

It was in the face of these conditions that U. S. Steel set out, years ago, to develop a single Safety Program which could protect our people, whatever and wherever their jobs. It had to be as effective for a man setting blasting charges on the Mesabi Range, as for the technician operating a spectrograph in the unhurried atmosphere of a laboratory.

It had to be capable of application in a plant of thousands, or on a riverboat with a crew of a dozen. Most important, it had to be sufficiently basic to have value in analyzing an individual job, yet so all-inclusive that it could help engineer safety into some of the most complex production equipment ever conceived by man.

We have such a Program today, and the benefits are even greater than we originally anticipated. It has given us more efficient and effective training of both our safety people and management responsible for the safety of employees. It has made possible better safety communications.

We are especially pleased that it has provided us with a single standard of measurement. We have long had standard means of measuring costs, production efficiency, quality, and profitability. Now in the area of safety, which ranks higher in importance than all of these, we have a common-to-all yardstick which can be used to measure safety performance anywhere, and everywhere, in United States Steel.

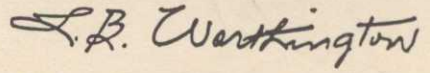
This collection of carefully developed techniques and tools designed to help our managers carry out their most vital responsibility, is our Safety Program. It has been our experience that, as our management people use and understand these tools and techniques, a common approach to safety is spread throughout our facilities and a common measurement of results is applied to every area.

U. S. Steel recently realigned and combined certain of its operating units and, in the process, found conclusive proof of the value of this single approach to safety. Because of our single Safety Program, none of our production or safety people have encountered difficulty in carrying out their safety responsibilities during this change. Nor has there been any problem when men have been transferred to other locations, or even in some instances to completely different types of operations.

While we believe our Program to be most effective, we also recognize that in so critical an area as safety, nothing must be considered complete. While we are proud of the Program and the records our people have produced by its application, we realize that so long as there is a possibility for one man to suffer one injury, we must continually strive for improvement.

The making, shaping and treating of steel is undergoing vast changes these days. Everywhere in industry, new processes and equipment are coming along at an accelerated pace. As a result, there is both a need and an opportunity to eliminate hazards by way of the laboratory and the drawing board. At the same time, any updating of facilities requires an equivalent updating in the skills of the people who operate those facilities through extensive and often expensive training.

None of us, I'm sure, would ever place a dollar sign on human life and limb. But just as we believe that no man has the right to jeopardize, by his own disregard for safety, the life or the future of another man and his family, so I hold that no management has the right to jeopardize, by its failure to provide sound programs of safety, the investment its company has placed in training a valuable employee.



L. B. WORTHINGTON, *President*
United States Steel Corporation

Pittsburgh, Pennsylvania
October 29, 1964

United States Steel

Safety Program

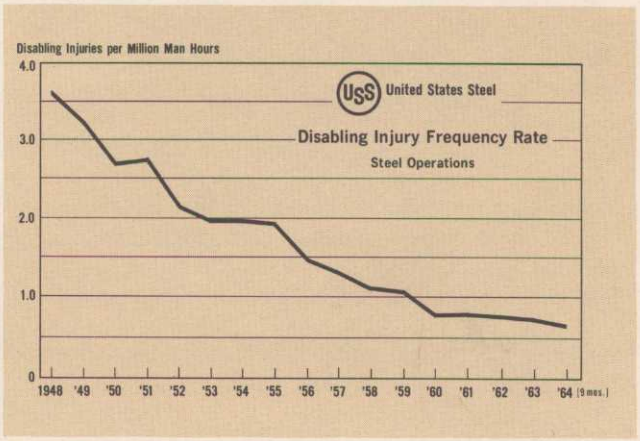
INTRODUCTION

United States Steel has one Safety Program which is used in all of its operations, regardless of size, location, or product. It is a dynamic program, which has evolved over a long period of time, and which continues to develop as experience and research point the way to further refinements.

The techniques—or management tools—which it now includes are those which have proved to be most useful in the conduct of effective safety activities. They are:

1. Job Safety Analysis and Safe Job Procedures
2. Basic Training
3. Individual Contacts
4. Safety Observations
5. Employee Records
6. Accident Investigation
7. Awareness Charts
8. Physical Conditions and Inspections
9. Activity Reports
10. Audits

These techniques have been introduced in Steel Operations beginning in 1948, and their use has enabled production management to achieve an 81% improvement in the Steel Operations' disabling frequency rate during the intervening 15 years.



Each of these management tools depends for its maximum effectiveness upon all of the others and, together, they form a highly coordinated and effective program of safety activities.

SAFETY ANALYSIS SHEET

JOB Installing Tube in No. 1 Preheat Boiler DATE 2-1-62

OPERATION Transporting Tube to Boiler House PLANT Plant A

OCCUPATION Boilermaker DEPARTMENT Maintenance

OBJECTS CAPABLE OF INFLICTING INJURY Ash Car, Tube, Tube Rack, Vehicles, Hot Rails, Trench Plates

INJURIOUS CONTACTS

POSSIBILITIES	WHAT PART OF OPERATION	DOES THE RECOMMENDED PROCEDURE ELIMINATE CONTACT
1. Caught between objects:		
Tube and Rack	Removing Tube from Rack	Yes
Tube and Railing	Transporting Tube	Yes
Tube and Door Frame	Transporting Tube	Yes
2. Strike against objects:		
Material Rack	Transporting Tube	No
Ash Car Hot Rails	Transporting Tube	Yes
3. Struck by objects:		
Vehicle	Transporting Tube	Yes
Ash Car	Transporting Tube	Yes
Tube	Transporting Tube	No

RECOMMENDED PROCEDURE FOR THIS OPERATION: Wear head protection, safety spectacles with side shields, metatarsal protection and work gloves. Two men select tube of diameter and length required and place portable platform in front of this rack. One man grasps end of tube and pulls it toward him (one)

Foreman G. J. Dorman Gen'l Foreman

Department Superintendent

Figure 1

JOB SAFETY ANALYSIS AND SAFE JOB PROCEDURES

The key to the Safety Program is employee training in the safe work methods for each occupation, with the details of this training spelled out so clearly that, no matter which Foreman or Job Trainer does the training, each workman receives the same instructions for the same job.

Job Safety Analysis

Safety training is based on Job Safety Analysis, which is the method of systematically identifying hazards inherent to or associated with the work performed by employees, and for developing step-by-step Safe Job Procedures which eliminate or minimize these hazards in the performance of the work.

Job Safety Analysis is conducted on a departmental basis, because the similarity of work performed on the occupations within a department often permits the analysis of one job element to be applied to jobs performed by employees on several occupations.

Effective administration of Job Safety Analysis activity requires considerable coordination within the department. While this coordination can be handled by the General Foreman, the Assistant Superintendent, or the Superintendent, depending upon the size and complexity of the department, it is advisable to place these functions in the hands of a full-time department Coordinator, at least until the activity is well established.

In order to determine the sequence in which jobs are to be analyzed, the Coordinator lists all occupations in the department, and the jobs performed by employees on those occupations. He then singles out the jobs which represent the greatest injury potentials. These are to be analyzed first, and the Coordinator assigns each job to a Foreman for such analysis.

The Foreman selects two or more of his workers who regularly perform the job, meets with them in a conference room or office away from the distractions of the work area, explains that their know-how is needed to develop a Safe Job Procedure, and leads them in making a systematic and objective Job Safety Analysis. He encourages their suggestions, helps them pool their experience, and guides their thinking about possible hazards and ways to eliminate or avoid them.

Analysis by the Foreman and his employees working together has several advantages. It adds worker know-how to management experience. It gives the workers a prominent part in determining Safe Job Procedures. It encourages the workers' suggestions and increases Foreman-Employee communications.

For example, four Boilermakers worked with their Foreman in a Job Safety Analysis Conference to analyze the job of Installing a New Tube in No. 1 Preheat Boiler.

This job requires two men to remove the boiler tube from a material rack in the Storeroom, carry it out of the Storeroom, across a plant roadway, and down a flight of stairs to the Boiler House basement. Electrically charged collector rails service the basement ash pit area. From the ash pit, the crew maneuvers (pulls) the tube into a vertical position, passing it through the appropriate holes in horizontal plates. Both ends of the tube must then be expanded to hold it in place.

Each Job Safety Analysis begins with the Foreman-Employee group dividing the job into its component parts or job elements. A job element is that part of a job which advances the work and accomplishes a definite result. In this analysis, the group determined that there were three elements in the job: Transporting the Tube to the Boiler House, Pulling the Tube, and Expanding the Tube.

Within each job element, all of the injury possibilities must be identified. Careful consideration of any potential injury situation will disclose that injuries occur through contact with some object. Once the objects have been identified, the types of potential contacts must be considered. It will then be apparent that an injury can occur when some part of the worker's body is CAUGHT BETWEEN two objects, or when his body is in motion and STRIKES AGAINST an object not in motion, or when some part of his body is STRUCK BY a moving object. Hence, looking for the injury possibilities in a job element means identifying the objects and the actions which can result in the employee's being involved in Caught-Between, Strike-Against, or Struck-By situations.

This Foreman-Employee analysis team listed on the Safety Analysis Sheet (Figure 1) all of the objects involved in the first element of the job (Transporting the Tube to the Boiler House) with which the worker could have injurious contact, and the types of contacts that could occur. These were the hazards inherent to this job element.

The next step is to recommend a work procedure for the element which will eliminate or avoid these hazards. This recommendation can involve changes in layout or tools or equipment, but chiefly it is a matter of getting the men who are familiar with the job to agree on the one best way to do it.

For example, the group suggested that the hazard of hot collector rails could be eliminated by opening and locking out a disconnect switch, and the hazard from vehicles on the plant roadway by flagging down and stopping all traffic.

Each suggestion was evaluated against the question, "Does the recommended procedure minimize or eliminate the hazard?"

At the bottom of the Safety Analysis Sheet, the Boiler Shop Foreman wrote down the complete step-by-step procedure for the element which the group recommended. Note that word "recommended". It is important because "recommending" is all that the Fore-

man-Employee group had the authority to do. Their recommendation would not become an established Safe Job Procedure until it had been reviewed and approved by higher management.

By the time the Boilermakers and their Foreman had completed the recommended procedure for performing the first element of the job, they had used up most of the time allotted to their Job Safety Analysis Conference. But before the meeting adjourned, they checked their recommendations by asking the same questions they had originally used to identify the Caught-Between, Strike-Against, and Struck-By possibilities.

Later they, or another group of Boilermakers familiar with the job of Installing a New Tube in No. 1 Preheat Boiler, prepared similar analyses of the second and third elements of the job—Pulling the Tube, and Expanding the Tube.

As each analysis was completed, it was sent to all Boiler Shop Foremen for review. Their comments were noted on the back of the sheet. If any major changes had been suggested, the analysis would have been returned to the original group of Boilermakers for additional study and revision.

Then the Safety Analysis Sheet—still in longhand—was routed by the Coordinator to a Review Committee composed of the General Foreman, the Department Superintendent, and the Safety Engineer.

Safe Job Procedures

As the Review Committee approved the analysis and the recommendations for each of the three job elements, the sheets were returned to the Coordinator for preparation of the step-by-step Safe Job Procedure (Figure 2) for the whole job of Installing a New Tube in No. 1 Preheat Boiler.

Working with one job element—one analysis sheet—at a time, the Coordinator extracted from the recommended procedure the protective apparel items required and listed them in the Protective Apparel column. He then transcribed, in the Procedure column, the step-by-step procedures which the groups had recommended for each job element. In the Hazard column, he entered the hazards identified on the Safety Analysis Sheet as those

SAFE JOB PROCEDURE

Date Issued March 15, 1962 Job No. BS20

Job Installing Tube in No. 1 Preheat Boiler--Maintenance Boiler House

Operations	Protective Apparel	Procedures	Hazards - (Safety Contacts)
1. Transporting Tube to Boiler	Hard Hats Safety Spectacles With Side Shields Metatarsal Protection Work Gloves Safety Lock	Wear head protection, safety spectacles with side shields, metatarsal protection and work gloves. Two men select tube of diameter & length required and place portable platform in front of this rack. One man grasp end of tube and pull it towards him until tube is far enough out of rack for man on floor to take hold of it. Both men pull tube all the way out of rack and lower tube to portable platform. One man steady tube on portable platform other man block open door to outside. Both men pick up tube and carry to platform outside of building. Lead man place front end of tube on permanent platform and stop all traffic. Both men carry tube across roadway and lower to ground. One man open and block door to boiler house and contact ashman and have him open ash car collector rail disconnects. Boilermaker to lock out. Other man unblock and close door to tube rack storage. Both men carry tube into boiler house cellar by carrying tube parallel to wall and door frame. Proceed to boiler under repair. Do not step on trenchplate and water hose.	1. Material Rack 2. Tube 3. Hot Rails 4. Vehicles

Figure 2

which could not be eliminated or avoided and hence require special instructions, along with the hazards which are avoided when the procedure is strictly adhered to.

When all of the pertinent data from the three analysis sheets had thus been incorporated into the Safe Job Procedure, the form was typed, duplicated, and distributed to all General Foremen and Foremen who supervise this job.

Although it is now the only acceptable method for doing the job, the Safe Job Procedure for Installing a New Tube in No. 1 Preheat Boiler shows two hazards which could not be eliminated from the element Transporting the Tube to the Boiler House—the material rack and the tube itself. In addition, two potential hazards are listed—the hot collector rails and the vehicles on the plant roadway. Although these two hazards are minimized by the procedure, they are key points which can make or break the built-in safety of the procedure and, therefore, must be called to workers' attention every time they retube this preheat boiler.

Most jobs can be analyzed in Job Safety Analysis Conferences in which employees participate with their Foremen. However, if the job involves new equipment such as an oxygen furnace or a high top pressure blast furnace, or a new process such as continuous casting, the analysis will have to be made by the Foreman or by some other member of management who has detailed knowledge of the job.

But whether the Job Safety Analysis is prepared in a Foreman-Employee Conference or is done by management alone, the same Caught-Between, Strike-Against, and Struck-By questions must be answered, and the step-by-step work method must be reviewed and approved before it is established as the Safe Job Procedure.

Review Conferences

Since equipment, processes, and product mix are constantly changing, and since each change, however slight, may require a revision of the Safe Job Procedure, a continuing schedule of Job Safety Analysis Review Conferences is maintained. This assures both the prompt development of revisions required by changing conditions, and the maintenance of good Foreman-Employee communications.

Review Conferences are also a fertile source of suggestions for improved Procedures even when conditions have not changed. For instance, when the job of Installing a New Tube in No. 1 Preheat Boiler was studied in a Review Conference, it was suggested that the tube rack be moved from the Storeroom to the Boiler House, and that a hole be cut in the top of the boiler so that the tube could be lowered into place from the top rather than being pulled up from the ash pit. These two changes eliminated the hazards of the hot collector rails and the vehicles in the roadway. They changed the procedure for the first two job elements, and resulted in a simpler, better, safer way to do the work.

BASIC TRAINING

Once a Safe Job Procedure is established, the next step is Basic Training. In Basic Training, the Foreman or the Job Trainer uses the Safe Job Procedure to guide him in instructing the employee, step by step, in the approved method of doing the job. Naturally, all required protective apparel is worn during this instruction.

Basic Training is not complete until the Foreman actually observes the man performing the job correctly and thus is certain that he knows how to do it. When this has been done, the Foreman is responsible for accepting no deviations from the Safe Job Procedure in that man's work.

In the case of a job which is performed only occasionally—such as turning the top half of a gas booster—management uses the Job Safety Analysis technique to prepare Special Safety Instructions. While such jobs are always performed under maximum supervision, employees are not permitted to begin work until the Foreman has assured himself that they are familiar with the Special Safety Instructions and are aware of the hazards inherent in the operation.

INDIVIDUAL CONTACTS

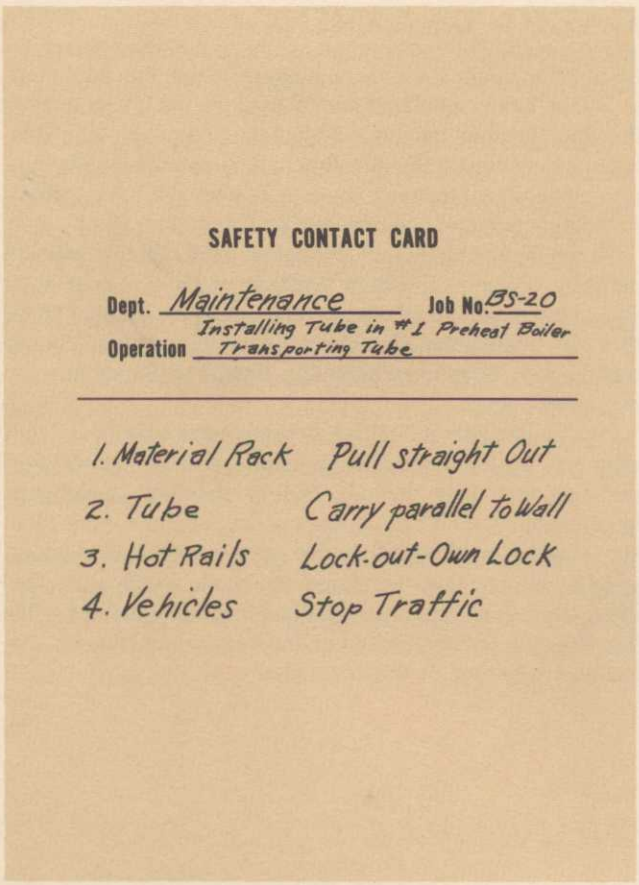
Through Basic Training, the employee is taught the approved way to do his job, and his performance is checked to verify his comprehension. But this does not end his safety instruction. Each Foreman must make at least one Individual Contact each week with each employee under his supervision, to continue his training and to consolidate his safety knowledge.

An Individual Contact is a planned follow-up training session conducted by the Foreman with the workman on the hazard possibilities highlighted in the Safe Job Procedure.

Individual Contacts are based on Safe Job Procedures. However, for their own convenience, many Foremen prefer to use a pocket-sized reminder card for each job, on which the hazards and key points of the Safe Job Procedure are summarized. These cards—variously referred to as Contact and Observation Cards, Job Hazard Cards, or Safety Contact Cards (Figure 3)—are used instead of the procedure sheets during the actual contacts.

Although, generally speaking, a Safety Contact Card is simply a convenient summary of the procedure sheet, there is one type of situation in which the card may serve as a temporary substitute for the Safe Job Procedure itself.

It may require a year or more to attain complete Safe Job Procedure coverage of an entire department and, since safety training cannot be postponed, interim coverage can be provided by having Foremen initially develop Safety Contact Cards, using the Caught-Between,



SAFETY CONTACT CARD

Dept. Maintenance Job No. BS-20

Operation Installing Tube in #1 Preheat Boiler
Transporting Tube

1. Material Rack	Pull straight Out
2. Tube	Carry parallel to Wall
3. Hot Rails	Lock-out-Own Lock
4. Vehicles	Stop Traffic

Figure 3

Strike-Against, Struck-By method of hazard identification. Such interim cards can then be used in the same way as regular Safety Contact Cards, pending the development of complete Safe Job Procedures by Job Safety Analysis.

Special emphasis is placed on the Foreman's choosing a time and place for the Individual Contact when the chances for distraction and interruption will be minimized. In contacting an inexperienced man, the Foreman is advised to use the "Tell-Show-Check" approach to explain what should and should not be done and why the approved procedure is the safest one. More experienced or more skilled employees, who might understandably take offense at the "tell him" approach, can be asked to explain the procedure to the Foreman, again with emphasis on WHY as well as WHAT and HOW. Foremen are reminded to end an "ask him" contact with a compliment for the man who has given a satisfactory explanation.

Because the Individual Contact is personal, the Foreman plans the subject matter to meet the employee's specific needs. It is this planning which makes the Individual Contact a systematic follow-up to the employee's Basic Training.

There are some jobs on which two or three men are required to cooperate so closely that it would be impractical to make separate contacts with them regarding Safe Job Procedures. In such cases, a contact made with the group is considered an Individual Contact with each man.

General Contacts

A General Contact differs from an Individual Contact only in subject matter. It may relate to any subject which will contribute to improved safety performance. Thus, it may be a planned discussion about a recent accident or series of accidents, a reminder of Unsafe Acts or Violations that have been observed, a review of a recent general safety bulletin, a discussion of housekeeping or tool conditions, or anything else that will add to the employee's safety knowledge of his working environment.

Although Basic Training and Individual Contacts are the preferred methods for developing safety skills and knowledge, Employee Safety Meetings are still used for some training purposes, and are considered as General Contacts.

SAFETY OBSERVATIONS

Safety Observations are used to make sure that safety communications between Foremen and employees—Basic Training and Individual Contacts—have been adequate. Through planned, continuing observations, management verifies that the proper protective apparel is being worn, that Safe Job Procedures are being followed, that hazards are understood, and that each employee is using all of his safety know-how at all times.

Each Foreman is required to make at least two Safety Observations of each employee each month, and to plan these Safety Observations so that they cover, on a systematic basis, all job operations for which the employee has received instruction. Thus, the Foreman can verify that the man knows how to do his job and that he unfailingly does it in the approved way.

Although all Foremen are continually alert to their employees' safety compliance and immediately correct any Unsafe Acts or Violations they see, such random checking does not meet the requirements for planned Safety Observations.

To assure that Safety Observations are properly scheduled, each Foreman determines, at the beginning of each week, which employees he will observe and the particular job operations on which each of them should be checked. Then, as opportunities are available, he watches each man performing one or more of these operations and verifies his compliance with all aspects of the Safe Job Procedure. Of course, if the employee is observed in a Violation of the Safe Job Procedure or in an Unsafe Act, the Foreman corrects him immediately—whether or not a planned Safety Observation is being made.

At this point, an important matter of terminology

must be clarified. For many years, no distinction was made between Violations and Unsafe Acts—or unsafe practices, as they were sometimes called. However, with the establishment of Safe Job Procedures and the training of employees in these procedures, it became necessary to draw a clear line between unsafe practices which violated established procedures and those which did not.

The word "Violation", therefore, is used to describe any act or practice which is contrary to a Safe Job Procedure, Safety Rule, or Specific Safety Instruction. However, it is not enough for a procedure or rule to exist —the employee must have had specific instruction in it before he can be considered to have violated it. Thus, a further distinction is made between "Violation" which means that the employee has been trained or instructed in the procedure or rule, and "Violation—Lack of Instruction" which means that he has not been so trained or instructed.

This distinction is important because a Violation occurs only when an employee acts contrary to his training or instructions. This is insubordination and requires enforcement action. On the other hand, an employee who has not been instructed in the procedure or rule cannot knowingly violate it, and his need is for training, not discipline.

With this definition of "Violation" in mind, it becomes clear that an "Unsafe Act" is one not covered by a Safe Job Procedure, Safety Rule, or Specific Safety Instruction—it is, in fact, an act not previously recognized as being unsafe.

When a Foreman observes any work method or condition which is not in accordance with established safety requirements, he immediately corrects it and reports his activity to higher management on a Supervisor's Safety Observation Report (Figure 4). Thus, all Unsafe Conditions, Unsafe Acts, Violations, and Violations—Lack of Instructions are reported, whether they were seen during planned Safety Observations or simply in connection with the Foreman's normal supervisory duties. When an employee is observed to be working safely during a planned observation, the Supervisor's Safety Observation Report is not used, but the observation is entered on that employee's individual record.

SUPERVISOR'S SAFETY OBSERVATION REPORT

○ Planned Observation
☒ Impromptu Observation

Occupation Keeper

Name Joseph R. Myers Check No. 20972

What was observed? I observed this man watering the iron runner before the 20 min. waiting period was over (Safe job procedure 123)

Where observed? # 1 BF Cast House

CHECK ONE:

○ Unsafe Condition
○ Violation — Lack of Instructions
○ Unsafe Act
☒ Violation of Rules, Procedures or Instructions

Action Taken or Recommended Reinstructed Myers and gave him a formal discipline slip

Foreman R. J. Collins Date 4-30-62

General Foreman G. Jones Date 4-30-62

Superintendent's Review and/or Action Instruct Myers if he violates this procedure again he will receive time off.

Superintendent Fred Smith Date 4-30-62

Figure 4

EMPLOYEE RECORDS

Special emphasis is placed on the importance of Safe Job Procedures and their use in Basic Training and in the planning of Individual Contacts and Safety Observations keyed to the specific job each worker is doing. But such planning cannot be done intelligently without a simple, effective method for recording each employee's safety training, experience, and activity. This method is the Employee Record, which is maintained on a current basis for each individual employee and provides the Foreman with complete information on the safety activities of each man in his crew.

Every Foreman must know exactly how much training each of his men has received, which of them have been contacted recently and on what subjects, which of them have been observed, and so on. But the Foreman cannot be expected to remember exactly what he did two or three months ago, and it is impossible for him to know the safety activities in which his men may have participated while under the supervision of other Foremen.

The Employee Record keeps track of all this important information. It is the employee's complete safety history—his Basic Training, Individual and General Contacts, Safety Observations, Unsafe Acts, Violations, Discipline, and Injuries.

When an employee starts work, his Foreman begins an individual Employee Record for him. Thereafter, each time that employee is involved in any safety or safety-related activity, his Foreman records the event.

Each entry includes the date, the Foreman's initials, and a notation of what happened. Code letters identify the type of activity, numbers identify the jobs, two or three words clarify what was covered or what occurred, and the final notation indicates the job elements involved.

The established codes for identifying types of activity are:

Basic Training–"B" and the number of the Safe Job Procedure

Individual Contact–"IC" and the number of the Safe Job Procedure or the Safety Contact Card for the safety items covered

Observation (no Violation)–"O" and the number of the Safe Job Procedure, Safety Contact Card, or Safety Rule covering the task being performed at the time of the observation

General Contact–"G" and an abbreviation of the subject covered

Unsafe Act–"U" and a short description of the Unsafe Act observed

Violation–"V" and the number of the Safe Job Procedure or Safety Rule violated

Violation–Lack of Instruction–"VLS" and the number of the Safe Job Procedure or Safety Rule violated

Violation plus Discipline–"VD" to indicate a disciplinary notice; "VD" plus a number to indicate the days of penalty where a layoff is given. The number of the Safe Job Procedure or Safety Rule involved is also noted

Minor Accident–"M" and a brief description

Disabling Injury–"DI" and a brief description

The Employee Record requires a minimum of clerical work on the part of the Foreman. Many departments use a pocket-size card for each employee and the Foreman carries these cards in a wallet in which he also keeps the Safety Contact Cards he intends to use that week. Entries are made on the man's Employee Record as the various safety activities occur.

Thus, on any given day, a complete written record of the employee's safety activity is available, and a Foreman—whether or not he has ever supervised this man before—can determine the worker's training, Contacts, Observations, Discipline, Violations, and Injuries, and can plan his own safety activities to meet the man's exact requirements.

Figure 5 is the Employee Record card for one Robert Johnson, Boilermaker, who was transferred from Field Maintenance to the Boiler Shop on January 1. Although, in actual practice, such a card would include notations of his regular weekly Individual Contacts and biweekly Safety Observations, only selected entries from a three-month period are shown here for purposes of illustration.

On January 2, Johnson was given Basic Training in Safe Job Procedure BS-20—Installing a New Tube in No. 1 Preheat Boiler. The Safe Job Procedure shows three steps for this job, and Johnson was instructed in all three of them that day. The entry is "B" for Basic Training, the Safe Job Procedure Number ("BS-20"), a few words to identify the job, and the numbers "1-3" to show the job elements involved.

On January 5, Johnson was observed Expanding the Tube, the third element of the job. The letter "O" indicates the observation, and the fact that no Violations are noted shows that he did it in the way in which he had been instructed.

On January 13, Johnson was shaping a chisel on a grinding wheel in the Boiler Shop when the Foreman walked by and noticed that he was wearing gloves. Johnson's Employee Record cards from his previous job in Field Maintenance showed that he had been instructed in the proper use of grinding wheels and that, on December 16, he had been contacted specifically about the hazards of wearing gloves while grinding tools. This Violation of Specific Instructions is recorded as "V" and the written disciplinary notice he received because of it is recorded as "D". If the discipline had been oral (not formalized by a disciplinary notice), only the "V" would have been recorded; if it had included a layoff, the number of days would have been noted after the "VD".

On January 15, Johnson was contacted on the hazards in all four steps of the pedestal grinding job—Safe Job Procedure BS-25.

EMPLOYEE RECORD

Robert Johnson (EMPLOYEE NAME)	10403 (CLOCK NO.)
Maintenance (DEPARTMENT)	Boilermaker (OCCUPATION)

DATE	FOREMAN	SAFETY ITEM
1-2-64	KW	B-BS20 Install Tube #1 Preheat 1-3
1-5-64	KW	O-BS 20 Expanding Tube 3
1-13-64	FH	VD grind chisel - gloves
1-15-64	FH	IC-BS25 1-4
1-20-64	R.M.	O-BS20 Pulling tube 2
1-23-64	R.M.	G-Clean Workarea retube
1-26-64	W.R.	V-LS(BS10) Bending plates
1-26-64	W.R.	B-(BS10) Bending rolls 1-6
1-26-64	W.R.	M-skinned knuckles
2-21-64	W.R.	B-(BS17) Heating Rivets 1-3
2-26-64	W.R.	O-(BS17) Heating Rivets 1-2
2-28-64	F.H.	O-BS17 Heating Rivets 3
3-2-64	G.D.	VD-2-BS17 Heating Rivets
3-23-64	F. H.	DI-Amputated Finger Tip

Figure 5

On January 20, the Foreman observed Johnson performing the second step, Pulling the Tube, of the job of Installing a New Tube in the No. 1 Preheat Boiler, which he did correctly.

On January 23, the Foreman made a General Contact with four Boilermakers on cleaning up the work area after completing a retubing job.

On January 26, a relief Foreman assigned Johnson to help out on bending boiler plate. While he was doing this, his Foreman observed him in a Violation of the Safe Job Procedure and questioned him about it. Johnson said that he had never been specifically instructed in bending plates. The two of them checked Johnson's Employee Record cards for the past year, and found this to be true. Therefore, the Foreman recorded this as a Violation with Lack of Specific Instruction—"VLS".

Before allowing Johnson to proceed further with the work, the Foreman gave him the specific instructions he lacked for doing this phase of the job. This action was recorded as Basic Training, since it was conducted from the Safe Job Procedure, and since Johnson had never received the instruction before.

Later that day, Johnson skinned his knuckles when a wrench slipped while he was taking up on the rolls. He was sent to the plant Dispensary for medical treatment, and returned to the job half an hour later. A Minor Injury was noted on his card.

On March 2, Johnson violated the Safe Job Procedure for the third step of Job BS-17. Although Foreman George Davis had never supervised Johnson before, he ascertained from Johnson's Employee Record card that he had been trained in this job on February 21, and had been observed performing it safely on both February 26 and February 28. Since he obviously knew the correct procedure, Johnson was given a two-day disciplinary layoff for this Violation. The number of days are included in the notation—"VD-2".

On March 23, Johnson amputated the tip of a finger while dressing a drift pin on a pedestal grinder. This Disabling Injury is recorded as "DI".

It is obvious that there are many advantages to the Employee Record:

- ✦ although different Foremen supervise an employee at different times, any Foreman can determine immediately what Basic Training, Individual Contacts, Safety Observations, and other significant activities he has had;
- ✦ the Employee Record facilitates the Foreman's planning of additional Individual Contacts and Safety Observations which are logically and directly related to the employee's previous training and activities; and
- ✦ entries on the Employee Record show the extent of the employee's voluntary compliance with Safe Job Procedures, and thus indicate what further action, if any, is required to help him achieve and maintain the required level of compliance.

MEDICAL PROGRAM

Safety techniques for the development of Safe Job Procedures, the training and observation of employees, and the maintenance of comprehensive Employee Records are designed for a single purpose—the prevention of injuries. The Safety Division, of course, is not alone in this effort—safety is the first concern of every member of Production management. And of particular importance is the close and continual liaison between Safety and Medical personnel.

U. S. Steel's Medical Program, while separate from the Safety Program, is closely associated with it in accident prevention activities. The Medical Program requires Plant Medical Directors to be familiar with the physical and environmental requirements of each job, in order to match them with the physical capacities of employees and thereby minimize injury possibilities from this source. In addition, the Medical Program minimizes the severity of injuries through prompt treatment, and provides information concerning the nature of each injury which can help in planning to prevent recurrence.

Yet in spite of the combined diligence of Safety, Medical and Production managements, injuries do occur and, when they do, management must be as zealous in its efforts to identify and eliminate actual causes as it was in identifying and eliminating potential hazards.

ACCIDENT INVESTIGATION

Accident Investigation, and the follow-up action based on accident findings, are essential management tools in the conduct of U. S. Steel's Safety Program.

In Accident Investigation, it is essential that every injury be reported to and investigated by the Foreman, regardless of its severity. The Foreman is responsible for:

- ✦ seeing that the injured man receives prompt medical attention;
- ✦ securing the area, if necessary, against further mishap;
- ✦ reporting the accident to the General Foreman; and
- ✦ beginning a systematic and comprehensive investigation of the accident.

The Foreman must submit a written report to the General Foreman before the end of the turn or—at most—within 24 hours after the accident happened.

In cases of minor injury, the Foreman's investigation and report are sufficient. But more severe injuries, or cases in which damage to equipment holds a potential for injury to personnel, require investigation by a committee. This committee is headed by a higher level of management, and the more severe the injury or the

UNITED STATES STEEL CORPORATION
WORKS

FOREMAN'S ACCIDENT REPORT

1. Name _____ 2. Check No. _____ 3. Case No. _____
4. Department _____ 5. _____ a.m. / p.m. _____ 6. Accident Date _____
7. Injured Body Part _____ 8. Nature of Injury _____
_____ 9. Age _____
10. Occupation When Injured _____ 11. Occupation Experience _____
12. Regular Occupation _____
13. Exact Location of Accident _____
_____
14. What Job Was Being Done? _____
_____
15. What Step of the Job Was in Progress? _____
_____
16. How Often Is This Job Normally Performed by Injured? _____
When Was Last Previous Time This Job Was Performed by Injured? _____
17. What Happened? _____
_____
_____
_____
_____
_____
_____
_____
_____
18. What Did the Man Do or Fail to Do That Contributed to His Accident? _____
_____
_____
_____
_____
Underlying Cause(s) _____
_____
_____
19. What Did Some Person Other Than the Injured Do or Fail to Do That Contributed to the Accident?
_____
_____
_____
_____
Underlying Cause(s) _____
_____

Figure 6-A

20. What Conditions of the Man's Environment (Tools, Equipment, Machines, Structures, Materials, etc.) Contributed to the Accident?

Underlying Cause(s)

21. Was Job Covered by a Job Safety Analysis Study? Yes_____ No_____
22. Were the Recommendations Being Followed? Yes_____ No_____
23. Was the Man Instructed in This Procedure? Yes_____ No_____
24. When Was His Last Safety Contact on This Job?
25. What Action Have You Taken and/or Do You Plan to Take to Prevent Recurrence?
    Enumerate Actions and Star(*) Those Already Taken
26. What Further Recommendations Do You Make?
27. Last Accident to This Individual_____ Date_____
28. List Names and Check Numbers of Witnesses
29. Foreman_____ 30. General Foreman_____

CORRECTIVE ACTION TAKEN – PLANNED (To be completed by Department Head)

31. Corrective Action Applied to Injured and/or Other Persons?
32. Corrective Action Applied to Environmental Conditions
33. Any Other Corrective Actions
34. Department Superintendent_____

Figure 6-B

greater the injury potential, the higher the organizational level of the investigating committee.

Fatalities are investigated immediately by two groups —a plant-level committee under the direction of the General Superintendent, and a Corporation-level group which makes a detailed, on-the-spot verification of the findings and recommendations of the plant committee. The Corporation group includes, as a minimum, the Director of Safety, and the General Manager and Chief Engineer of the operation.

The Foreman's Accident Report (Figures 6-A and 6-B) is a printed two-page front-and-back form with space for recording all pertinent information about the accident. The form serves three purposes: it is a checklist for the Foreman's determination of the facts, it is the basis on which he formulates his recommendations, and it is his report of what happened.

One critical group of questions deals with whether the job on which the accident occurred was covered by a Job Safety Analysis study—that is, a Safe Job Procedure—and whether the Procedure was being followed at the time of the accident; whether the man had received Basic Training; and how recently he had been contacted. The importance of these facts in checking the adequacy of safety training and in determining the Foreman's recommendations for remedial action is obvious.

No matter how thorough the Foreman's investigation has been, it must always be checked by other members of management. Hence, the Foreman's Accident Report is reviewed by the General Foreman who, on the basis of the facts and findings, appraises the Foreman's recommendations for corrective action. When the General Foreman is satisfied that the facts are accurate and the recommendations adequate, he sends the Report to the Superintendent for his comments.

In order to utilize the accident experience in each plant as a positive force for preventing similar accidents in all other plants, a rapid communication routine is used. Information on all fatalities, disabling injuries, major fires, near-serious accidents, and unusual occurrences is telephoned immediately to Corporation Safety Headquarters in Pittsburgh. A preliminary report is sent immediately to the Operations Vice President and is teletyped to all Corporation locations which can benefit from it. This alerts all works locations to the possibility of a similar accident. Four days later, reports summarizing the complete fact finding results are distributed. These provide detailed information for plant use.

Plant managements discuss these reports in their departmental operating meetings and, if appropriate, they:

- ✦ contact employees to inform them of the accident;
- ✦ check and, if necessary, revise related Safe Job Procedures and Safety Rules;
- ✦ contact and instruct employees concerning these revised safety requirements;
- ✦ observe employees for compliance with the safety instructions given to them during the contacts occasioned by the accident; and
- ✦ record these contacts and observations on the Employee Records.

Investigation of injuries, or of damage to equipment where there is a potential for injuries, identifies accident causes and enables corrective action. However, this activity will always be on a "per occurrence" basis, unless the information is assembled systematically so that it can be used to predict critical situations which can lead to still more accidents and injuries.

The technique for creating management awareness of these critical situations is the Awareness Chart.

AWARENESS CHARTS

Awareness Charts (Figure 7) convert statistics on Injuries, Violations, and Unsafe Acts into safety trends which pinpoint the areas where greater safety control is needed. They are simply tally forms on which the Superintendent records, by occupation, all Injuries (both disabling and minor), all Violations, and all Unsafe Acts which have been observed in the department during the month. Injury data come from the Foreman's Accident Reports. Violations and Unsafe Acts are tallied from the Supervisor's Safety Observation Reports.

If the Awareness Chart shows that an undue number of Injuries, Violations, or Unsafe Acts are occurring on a particular occupation, it is obvious that some corrective action is needed. Therefore, a second tally sheet is prepared on which each occurrence is tabulated by the specific act involved.

For example, the tally in Figure 8 shows that 75 of the 125 Violations observed among the Boilermakers were Violations of the Safe Job Procedure requirement that hands be kept off lifts during hooking operations. In addition, seven of the 12 nondisabling injuries to Boilermakers involved this SAME Violation. To correct this situation, it will not be necessary to revise the Safe Job Procedure, but it will be necessary to enforce the existing Safe Job Procedure more effectively.

Thus, it is clear that the Awareness Chart is a self-correction device built into the Safety Program—a management tool which provides continuous self-policing of the effectiveness of safety activities.

PHYSICAL CONDITIONS AND INSPECTIONS

So far, the management tools have dealt primarily with the "man" side of the safety equation, but there are similar tools for the "job" side—physical conditions

AWARENESS CHART

YEAR 1964 - 8 mos. DEPARTMENT Maintenance

OCCUPATION	OCCURRENCE	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	TOTAL
Machinists	Injuries	3	1	–	–	1	–	–	–					5
	Violations	5	3	2	4	2	1	5	3					25
	Unsafe Acts	2	–	3	–	1	1	1	–					8
Pipefitters	Injuries	–	–	2	–	3	1	2	1					9
	Violations	2	2	1	3	5	4	3	2					22
	Unsafe Acts	–	4	–	–	–	–	–	2					6
Welders	Injuries	–	–	–	2	–	–	3	–					5
	Violations	1	1	1	2	–	2	3	–					10
	Unsafe Acts	5	–	–	3	–	2	–	–					10
Boilermakers	Injuries	1	1	2	1	1	2	1	3					12
	Violations	10	15	16	10	14	15	20	25					125
	Unsafe Acts	3	–	–	2	–	–	–	–					5
Bricklayers	Injuries	–	–	–	–	1	–	–	–					1
	Violations	5	1	1	1	3	2	5	3					21
	Unsafe Acts	–	3	–	–	–	–	–	–					3
Riggers	Injuries	–	–	–	–	–	–	–	–					0
	Violations	1	1	1	–	–	–	1	–					4
	Unsafe Acts	4	–	5	–	2	2	1	3					17
Blacksmiths	Injuries	–	1	–	–	1	–	–	1					3
	Violations	1	1	1	2	1	2	2	1					11
	Unsafe Acts	2	–	2	–	2	–	3	–					9
Electricians	Injuries	2	–	–	–	2	–	–	2					6
	Violations	2	1	3	3	3	2	4	2					20
	Unsafe Acts	2	3	–	3	–	–	3	–					11
TOTALS	Injuries	6	3	4	3	9	3	6	7					41
	Violations	27	25	26	25	28	28	43	36					238
	Unsafe Acts	18	10	10	8	5	5	8	5					69

Figure 7

AWARENESS CHART - Boilermaker (8 mos. - '64)

(Tally Sheet)

SPECIFIC VIOLATIONS	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	TOTAL
Not tied off		1	1	2	1	3	4	3					15
Hands on lift	5	4	12	6	8	11	13	16					75
Oxygen fuel tanks not secured	1	6	3	2	5	1	1	2					21
Pressure on unattended tools	2	4					1	3					10
Not locked out	1						1	1					3
Grinding with Gloves	1												1
TOTALS	10	15	16	10	14	15	20	25					125

Figure 8

(equipment, facilities and environment) and inspections. They deal with design standards; with protecting facilities from damage or destruction by fire, explosion, or any other accident; and with assuring that defective or unsafe equipment or facilities will be removed from service before they can cause injuries to personnel.

Safe physical conditions can be established and maintained only if three basic requirements are met:

1. Safety standards are established and enforced in the design and specifications of equipment and facilities;
2. Newly installed or changed facilities are inspected and approved for safety before they are released for operation or use; and
3. Specific responsibilities are established for periodic inspection, and for prompt correction of deficiencies or immediate shutdown of equipment if a serious hazard is found.

A few examples from the Corporation's safety design standards will indicate the coverage they provide.

The *Safety Guide Pertaining To Physical Conditions* establishes standard requirements for the elimination of potential hazards. Illustrating the scope of the coverage is the Table of Contents of the *Guide*. The Safety Recommendations Applying to Manufacturing and Related Auxiliary and Service Facilities include these headings:

> Coke and Chemical Products Plants; Blast Furnaces; Hot Metal Shops; Rolling Mills; Pipe Mills; Boiler House; Pulverizing Coal for Fuel; Gas Mains—Gas Producers; Turbines, Engines, Governors, and Blowing Equipment; Machinery and Operating Equipment; Emergency and Important Valves; Cranes; Plant Railways; Tank Cars; Buildings and Grounds; Mill Platforms and Walkways; Stairways; Steam and Hot Water Heating Facilities and Radiant Heaters; Stationary Ladders; Elevators; Scaffolds; Electrical Installations; Pressure Vessels; Carbon Dioxide Flooding Systems; Grinding Equipment; Pipe Line Identification; Gas Welding and Cutting; Arc Welding; Conveyors; Liquified Petroleum Gas; and Liquid or Gaseous Powered Equipment.

The Safety Recommendations Applying to Sanitation cover:

> Construction of Buildings and Rooms; Toilet Rooms; Locker and Wash Rooms; Rest Rooms for Women; and Water Supply for Human Consumption.

And there are additional detailed sections covering Safety Recommendations Applying to Ventilation, and Safety Recommendations Applying to Lighting.

The *Explosion Hazards Manual* sets forth the basic requirements for eliminating or minimizing the hazards of fire and explosion in the Utilities, Chemical Products, Rolling, Open Hearth, and Blast Furnace Departments. It spells out the engineering specifications for design of facilities and purchase of equipment, as well as the normal and emergency operating procedures which must be observed in these areas where potential fire and explosion hazards are especially critical.

Other standards comprehend guideposts necessary to prevent or control exposure to noise, ionizing radiation, or concentrations of toxic dusts, gases, or fumes. These are developed by the Industrial Hygiene Division of the Corporation.

U. S. Steel's Research Center is continually engaged in the development of new and improved products and operating methods. The Center also conducts special research projects, such as those aimed at increasing the protection afforded by safety apparel and equipment.

To assure that all relevant standards are kept up-to-date, the Safety Staffs at Plant and Corporation levels notify the Engineering Department of all accidents, including those involving equipment failures or deficiencies, and keep them informed of new or revised safety requirements, and new or revised Federal, state, and municipal codes and regulations.

With safety requirements established for the design of facilities and equipment, the next step is to assure that the safety requirements are met.

The Engineering Department checks all drawings and specifications of new or changed facilities, for compliance with safety requirements. Those items posing unusual problems—such as wheel guards for a straddle carrier—are also checked specifically with the Safety Staff. In addition, the Purchasing Department provides all vendors bidding on equipment with a copy of the safety requirements for that equipment.

Before new or changed equipment is put into operation or use, it must be inspected and approved by representatives of Engineering, Production, Maintenance, and Safety.

After it is in operation or use, the equipment is inspected regularly to assure its maintenance in a safe condition. Specific responsibilities, time schedules, and controls are established to assure that these inspections are actually made. Some inspections are made daily by the operator. Others are made weekly, biweekly, or

monthly, by management. Still others—like those of steel structures—are made annually or biannually by qualified technical personnel.

Each works location is inspected twice a year by one of a rotating team of Fire Protection Engineers. The recommendations growing out of these inspections are carefully considered both for maintenance of facilities and for improvement of fire protection standards.

Printed forms are used to report most inspections, both to assure that the inspections have been made as required, and to indicate current conditions. Such written reports are filed on all scheduled inspections of pinch points, guarding, housekeeping, tools, cranes, portable equipment, mobile equipment, and structures.

Keeping tools in a safe condition is a problem which constantly concerns all Foremen. For this reason, the requirements for dressing certain types of hand tools have been established and published in a booklet, *How to Dress Tools,* which provides Foremen with bench marks for removing defective tools from service during their weekly inspections.

Thus, the Safety Program provides a complete kit of management tools for dealing effectively with both the man side and the job side of the safety equation.

ACTIVITY REPORTS

To provide administrative control of the Program, one more technique is needed—a means for assessing how effectively all of the other tools are being used. Safety activities are conducted on all organizational levels—Foreman, department, and plant. Therefore, Foreman's Safety Activity Reports, Department Safety Activity Reports, and Plant Safety Activity Reports are used.

Foreman's Safety Activity Report

The Foreman's Safety Activity Report (Figure 9) is not difficult to prepare, especially if the entries are made daily, at the end of the turn. Only one number is entered in each column daily, and the information is quickly available.

The Foreman knows how many injuries there were, how many Job Safety Analysis Conferences he held, and how many housekeeping, tool and equipment inspections he conducted during the day. All of the other items—Individual and General Contacts, Safety Observations, Violations, Unsafe Acts, and Disciplinary Actions—are easily tabulated from his Employee Record cards.

At the end of the week, the Report is submitted to the General Foreman, who uses it in his weekly meeting with the Foreman, to review his past safety activities, to see if he is meeting standards, and to help him plan his safety activities for the following week.

Department Safety Activity Report

The Department Safety Activity Report is a simple monthly consolidation of the reports received from all Foremen, grouped according to the General Foremen to whom they report. Injuries and safety activities attributable to each Foreman are entered on separate lines, with departmental totals at the bottom of the sheet.

Plant Safety Activity Report

Similarly, the Plant Safety Activity Report is a monthly consolidation of the reports received from the various departments. The plant report is used to prepare the statistical data required by Corporation Headquarters, and is also transmitted to the General Superintendent. It is the basis for the General Superintendent's monthly safety meeting with the members of his staff, including the General Supervisor–Safety, since it highlights undesirable trends and thus permits their immediate discussion, and the development of plans for their correction.

SAFETY AUDITS

Safety Activity Reports at plant and department levels provide the means for continuous safety audits OF and BY every level of management. Such audits are indispensable to the General Superintendent in determining whether the total safety activity of the plant is the result of the efforts of a few departments, or of all levels of management in all departments.

These audits cannot be viewed in the same light as inspections, since they comprehend evaluation of all aspects of the Safety Program (not simply Physical Conditions) with special emphasis on the QUALITY as well as QUANTITY of safety activity at every level.

In addition to the safety audits conducted by the plant General Superintendent, such audits are also scheduled and conducted by Production management, with participation by various organizational levels of Maintenance and Safety personnel, from:

- within the department being audited,
- other departments of the same plant,
- other plants of the Corporation, and
- Corporation Headquarters.

Safety auditing contributes most to the achievement of acceptable safety performance when it is based on clear, precise, logical statements of safety responsibility

FOREMAN'S SAFETY ACTIVITY REPORT

DEPARTMENT Pipe Shop FOREMAN J.R. Kelly NO. MEN SUPERVISED 20 WEEK OF Aug. 9, 1964

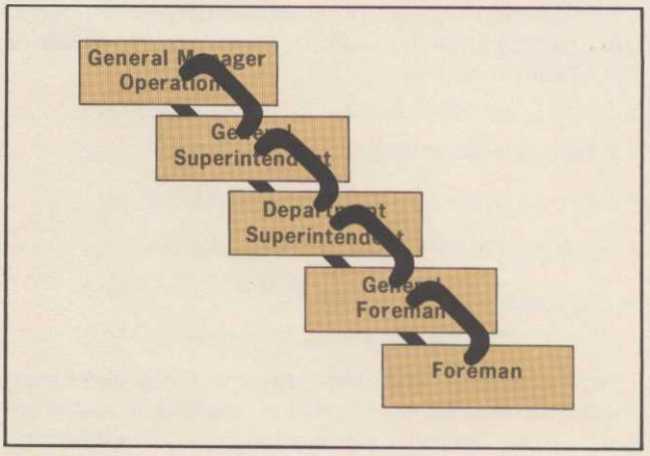
DATES	NO. OF INJUR.	CONTACTS		OBSERVATIONS			DISCIPLINE		JSA CONFERENCES		UNSAFE CONDIT.	INSPECTIONS	
		INDIVIDUAL	GENERAL	PLANNED	VIOLATION Rules, Proc. Instruction	UNSAFE ACTS	WRITTEN	TIME OFF	HELD	NO. EMPL. ATTENDING		HOUSE KEEPING	EQUIP.
8-10	0	5		1		1							1
8-11	0	3	1	4	2		1					1	
8-12	0	7		2							1		
8-13	1	4		2	1			1				1	
8-14	0	6	3	1					1	3			1
TOTALS	1	25	4	10	3	1	1	1	1	3	1	2	2

Figure 9

and accountability for every level of management. Such statements of responsibility and accountability comprise U. S. Steel's *Minimum Requirements for an Effective Safety Program*. The complete text of the *Minimum Requirements* begins on page 29.

The *Minimum Requirements* draw a line between what is acceptable and what is not, and give the General Superintendent, and all other members of management, an inflexible yardstick against which they can evaluate the safety efforts of each member of management.

In United States Steel, line management is responsible for the safety of the work force. Therefore, the plant General Superintendent is responsible for the safety performance of his plant, and is accountable to a General Manager at Corporation Headquarters for seeing that every member of his management performs effectively all of the safety activities with which he is charged. This establishment of personal safety RESPONSIBILITIES for each level forges an unbroken chain of safety ACCOUNTABILITY from the individual Foreman through the General Superintendent—and, of course, through Production executives to the president of United States Steel.



BASIC ESSENTIALS

The relationships among all of the management tools used in United States Steel's Safety Program can best be shown on a schematic flow chart (Figure 10).

Through Job Safety Analysis, Safe Job Procedures are developed. These are used in Basic Training and are the source of the Safety Contact Cards used for refresher training (Individual Contacts) and for training follow-up (Safety Observations).

Entries on the Employee Record include Basic Training, Safety Observations, Individual Contacts, participation in Job Safety Analysis Conferences, and the man's Injury experience.

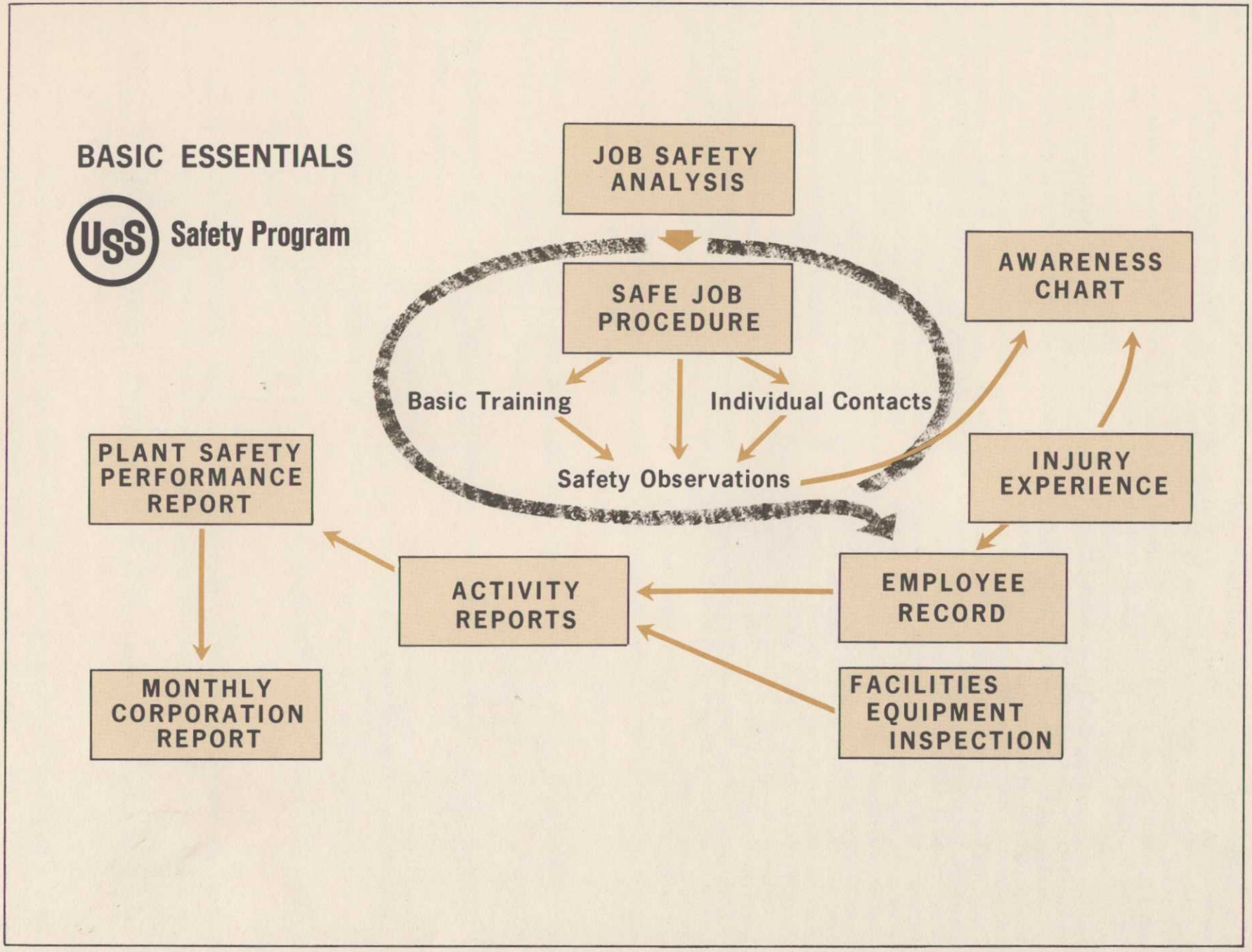

BASIC ESSENTIALS
USS Safety Program
JOB SAFETY ANALYSIS
SAFE JOB PROCEDURE
Basic Training
Individual Contacts
Safety Observations
AWARENESS CHART
INJURY EXPERIENCE
EMPLOYEE RECORD
FACILITIES EQUIPMENT INSPECTION
ACTIVITY REPORTS
PLANT SAFETY PERFORMANCE REPORT
MONTHLY CORPORATION REPORT

Figure 10

In addition, Injuries, Violations, and Unsafe Acts are tallied on the Awareness Chart.

Safety activity is recorded on Employee Records, Supervisor's Safety Observation Reports, and Facility and Equipment Inspection reports, which provide the data for the various Activity Reports. These, in turn, are the basis for the Plant Safety Performance Report and the report to Corporation Headquarters, both of which reflect the plant's monthly injury statistics.

Continuing audits of all management safety activities provide positive and constructive control of the Safety Program.

And, finally, to supplement all of its other accident prevention techniques, United States Steel continues to rely on one of the oldest of all safety efforts—advertising and publicity. Posters, banners, decals, motion pictures, and articles in the various U. S. Steel publications, are used regularly.

A case in point is the Corporation-wide attack on hand and finger injuries, in which handouts, posters, bright-colored gloves, decals, and a motion picture *With These Hands,* have been used to increase employee awareness of hazards, and to supplement training, specific instructions, Individual Contacts, Observations, and safety meetings on the subject. Similar campaigns have been conducted on eye injuries and on other special safety problems.

The film *Knowing's Not Enough,* which has been widely used in this country and abroad, has been one of the Corporation's most successful safety publicity efforts. Its title was carefully chosen and sums up, as well perhaps as any three words can, the entire approach to safety in U. S. Steel—KNOWING'S NOT ENOUGH.

Every U. S. Steel production employee has seen *Knowing's Not Enough.* Many have seen it several times. It is the most powerful single medium the Corporation has yet found for motivating people to participate in the Safety Program—to apply their safety know-how and assume their rightful safety responsibilities.

A safety program is like a blueprint. Just as no blueprint ever put up a building, no safety program, in itself, ever eliminated accidents. Both can only simplify the task and point the way.

Only a skilled construction crew can erect a structure —and only a skilled Production department, unreservedly dedicated to safety, can use the safety blueprint to eliminate accidents. That is what has converted U. S. Steel's Safety Program into outstanding safety performance and has made Safety First the guiding principle in every operation.

Safety must always be the foremost concern of all—manager and worker alike. Simply KNOWING will never be enough—not for anyone who strives to achieve, as soon as humanly possible, the goal of Accident Frequency Zero.

MINIMUM REQUIREMENTS FOR AN EFFECTIVE SAFETY PROGRAM

I. The responsibility for safety is vested in line management with each level of line management being accountable to its superior for safety performance. The safety responsibilities of line management are met when the functions of safety administration, control, and training are performed systematically and continuously to the end that acceptable performance standards are met.

II. Since line management is accountable for safety performance, such performance becomes a measure of their management capabilities. Therefore, the specific requirements at each level of management are set forth to develop a clear understanding of how these functions are coordinated to provide an integrated Safety Program.

III. In the statements of responsibility, the management titles used were selected on the basis of common usage within the Corporation. In order that they may be uniformly interpreted in all operations, the following definitions are provided:

A. **EXECUTIVE OFFICER**—The Vice President or General Manager responsible for all plants of an operating group, a division, or an associated subsidiary.

B. **PLANT MANAGER**—The individual responsible for all units of an operation, such as a plant, mining district, construction district, warehouse, etc.

C. **DIVISION SUPERINTENDENT**—The individual responsible for more than one operating department within a plant or a works location.

D. **DEPARTMENT HEAD**—The individual responsible for related operations which comprise a section of a division or plant.

E. **GENERAL FOREMAN**—The individual responsible for an assigned area within a department or operation and who supervises and coordinates the activities of Foremen.

F. **FOREMAN**—The individual who comprises front line management and who is in constant, daily contact with production and maintenance workers.

G. **SUPERINTENDENT–PERSONNEL SERVICES**—The individual responsible for the staff administration and coordination of all personnel services functions at an operating location.

H. **GENERAL SUPERVISOR–SAFETY**—The individual responsible for the staff coordination of the local safety activities.

I. **SAFETY ENGINEER**—The individual who provides safety staff services within a unit or units of an operation and who reports to the General Supervisor–Safety.

PLANT MANAGER

The responsibility for the plant's safety performance is vested in the Plant Manager who is accountable to an Executive Officer.

The Plant Manager is responsible for:

I. Establishing and administering the Corporation Safety Program in the plant in keeping with predetermined objectives.

II. Establishing controls to assure uniform department performance in compliance with Safety Program elements.

III. Establishing a training program which will develop in each member of management a strong safety attitude and a clear-cut understanding of specific duties and responsibilities.

A. Administrative Functions

1. Adopts and enforces established safety rules and regulations.
2. Approves all plant safety rules and regulations.
3. Adopts and installs Awareness Charts.
4. Adopts standards for identification of utilities throughout the plant.
5. Requires each department to identify and guard or eliminate areas of injurious contact.
6. Approves procedure for issuance of protective apparel in accordance with established policy.
7. Adopts Job Safety Analysis and sees that it is properly utilized.
8. Adopts a plant-wide housekeeping inspection program and participates monthly in the inspection of an assigned area.
9. Reviews daily the plant safety performance for the past 24 hours and discusses problems with staff.
10. Holds one formal safety meeting per month with staff including the General Supervisor–Safety.
11. Cancels, in the event of a fatality or major catastrophe, other activities and proceeds to scene.
12. Serves as chairman of committee investigating all fatal accidents and major catastrophes.
13. Defines geographic areas within works location which delineate responsibilities for housekeeping.
14. Maintains effective and prompt safety communication through line organization to all management members.
15. Assigns management help, where needed, to improve safety performance.
16. Maintains individuals in all plant management positions who have demonstrated their ability to effectively administer Safety Program elements.
17. Instills, by action and example, a sincere safety attitude through all levels of management.
18. Establishes a plant-wide plan for emergency or first aid treatment of sick or injured employees.
19. Requires a safety inspection by operating, engineering, and safety personnel before new equipment is placed in operation.

B. Control Functions

1. Reviews monthly records of plant's safety activities.
2. Makes necessary field audits with the General Supervisor–Safety to appraise Program's effectiveness at department level.
3. Reviews annually the plant's adherence to Corporation Safety Program to determine effectiveness and need for changes to improve performance.
4. Insures that all Superintendents meet the minimum requirements of the Corporation Safety Program.
5. Approves list of critical occupations for which periodic physical examinations are required.

C. Training Functions

1. Develops a strong attitude of safety responsibilities and a thorough understanding of predetermined safety objectives.
2. Provides for coordination of Job Safety Analysis.
3. Evaluates the staff's safety performance and provides guidance and training, where needed, to improve performance.
4. Makes safety contacts with staff members.

DIVISION SUPERINTENDENT

(In operations where the position of Division Superintendent is not used, these responsibilities and functions will be assumed by the Department Head in addition to those described for that position.)

The responsibility for the safety performance of a division of a plant is vested in the Division Superintendent who is accountable to the Plant Manager.

(Continued)

DIVISION SUPERINTENDENT (Continued)

The Division Superintendent is responsible for:

I. Administering the division safety activities in keeping with the Corporation Safety Program and objectives.

II. Maintaining adequate controls to assure that the Corporation Safety Program requirements are met.

III. Establishing a training program which will develop in each member of management a strong safety attitude and a clear-cut understanding of specific duties and responsibilities.

A. Administrative Functions

1. Reviews daily the division safety performance for the past 24 hours and discusses with Department Heads.
2. Contacts each Department Head daily on safety activity matters.
3. Conducts a regularly scheduled staff safety meeting at least twice a month.
4. Serves as chairman of committee investigating accidents resulting in disabling and serious nondisabling injuries and near serious accidents.
5. Defines geographic areas which delineate Department Heads' responsibilities for maintenance and inspection of facilities.
6. Communicates promptly all matters pertaining to safety through line organization.
7. Cancels, in event of a serious accident, all other activities and proceeds to scene of accident.
8. Enforces established safety rules and regulations and approves division safety rules before submitting to Plant Manager.
9. Analyzes problem areas and assigns staff or operating assistance as needed.
10. Evaluates departmental safety performance monthly.
11. Reviews monthly with Plant Manager the division Safety Activity Reports.
12. Maintains an effective "chain of command" so that the Corporation Safety Program is uniformly applied throughout the division with prompt action being taken on safety matters at the lowest responsible level of management.
13. Makes periodic checks on utility identification for compliance with plant standards.
14. Maintains identification and guarding or elimination of injurious contact areas.
15. Establishes standards for the uniform issuance and use of protective apparel in accordance with plant requirements.
16. Adopts a plan for indoctrination of new or transferred employees to insure thorough understanding of job safety requirements.

B. Control Functions

1. Reviews records of division safety activities and evaluates safety performance monthly.
2. Makes field audits to observe Safety Program's effectiveness.
3. Makes monthly housekeeping and facility inspections.
4. Attends departmental safety meetings periodically to audit effectiveness.
5. Prepares monthly Safety Activity Report and submits to Plant Manager with copy to the General Supervisor–Safety.
6. Utilizes Awareness Charts in accordance with overall Program.
7. Reviews reports of participation in Job Safety Analysis conferences to check on adequate employee coverage.

C. Training Functions

1. Maintains individuals in all division management positions who have demonstrated their ability to administer the Safety Program effectively.
2. Arranges for safety training tailored to division needs.
3. Participates in the development and execution of plant safety training activities.
4. Instills, through action and example, a sincere safety attitude in all levels of management.
5. Provides guidance to Department Heads, where needed, to improve performance.
6. Instructs Department Heads in procedure for care and treatment of sick or injured employees.

DEPARTMENT HEAD

I. The responsibility for the safety performance of a department is vested in the Department Head who is accountable to the Division Superintendent for the capabilities of individual members of the department organization and for the department organization as a whole. (Where Department Head reports to the Plant Manager, the accountability is then to the Plant Manager.) *(Continued)*

DEPARTMENT HEAD (Continued)

II. The minimum requirements will be met when the Department Head fulfills the administrative, control, and training functions listed below. (Where Department Head reports to Plant Manager, administrative, control, and training functions of Division Superintendent are also assumed by this level of management.)

A. Administrative Functions

1. Contacts each General Foreman daily on safety.
2. Holds a safety meeting weekly, covering each member of department management at least once a month.
3. Makes daily observations of General Foremen's safety activities.
4. Reviews and approves all job procedures growing out of Job Safety Analysis; installs approved Safe Job Procedures; requires each General Foreman to check on use of Safe Job Procedures; and reviews weekly schedule of job element analyses.
5. Maintains Awareness Charts for Unsafe Acts, Violations, Violations—Lack of Instructions, and Injuries; reviews monthly and keeps current.
6. Approves all departmental safety rules and regulations, and Safe Job Procedures, and reviews annually; maintains strict enforcement; and develops plan to insure employee instruction and reinstruction.
7. Establishes acceptable housekeeping standards, defining areas of responsibility; assigns areas to General Foremen; makes daily spot check of some area; holds formal inspection at least once per month with General Foremen; submits written report to Division Superintendent with assignments and deadlines for correction; and makes inspections with Safety Engineer.
8. Purchases and/or fabricates tools and equipment to comply with plant specifications and consults with Metallurgical and/or Engineering Departments as required.
9. Establishes standards and schedules of inspection for chains, wire rope, slings, clevises, pins, hooks, spreaders, etc.
10. Develops standards and schedules the inspection of powered material-handling equipment.
11. Reviews crane inspection reports; makes spot check of field conditions; and, with Superintendent of Maintenance, establishes a sound schedule for physical, mechanical, and electrical inspection of all department cranes at least once a month, showing time of inspection and inspecting personnel.
12. Schedules surveys to assure complete identification of utilities.
13. Surveys pinch points; takes immediate action to eliminate or guard pinch points; and resurveys work areas for pinch points whenever a change in equipment, process, or method is made.
14. Develops an indoctrination plan for new or transferred employees which includes specific job instruction, issuance of protective apparel, and follow-up checks by Foremen and General Foremen.
15. Develops and submits to the plant Medical Department, in accordance with plant procedure, a list of employees who are to receive periodic physical examinations.
16. Adopts standards for assigning protective apparel to employees; insists upon strict enforcement; and makes spot field checks to determine compliance.
17. Reviews Job Safety Analysis reports to assure continuous activity.
18. Reviews daily the safety performance for the past 24 hours and discusses with General Foreman; and provides a medium whereby the Safety Engineer can meet with him daily or as required.
19. Personally reviews all nondisabling injuries with injured and injured's Foreman.

B. Control Functions

1. Maintains the following records to assure compliance with minimum requirements:
   a. Awareness Charts;
   b. File of Foremen's Safety Activity Reports;
   c. File of completed Employee Record cards;
   d. Occupation file containing Foreman's Accident Reports and Supervisor's Safety Observation Reports (for use in analyzing adverse trends that appear on Awareness Charts); and
   e. Inspection Reports.
2. Evaluates General Foremen's safety performance monthly.
3. Submits report of safety activities monthly to Division Superintendent.

C. Training Functions

1. Adopts a training plan which will develop, in each member of management, strong safety attitudes and a clear-cut understanding of specific duties and responsibilities.
2. Instills, by action, example, and training, a sincere safety attitude through all levels of management.
3. Instructs General Foremen in plant procedures for the care and treatment of sick or injured employees.

GENERAL FOREMAN

I. The responsibility for the safety performance of an assigned department area and the training and development of each Foreman is vested in the General Foreman who is accountable to the Department Head.

II. The minimum requirements will be met when the General Foreman fulfills the administrative, control, and training functions listed below.

A. Administrative Functions

1. Makes one individual safety contact per day with each Foreman and sees that Foremen meet the minimum requirements for safety contacts.
2. Makes one safety observation per day of Foremen's safety activities.
3. Arranges for development of Job Safety Analyses; reviews all Job Safety Analyses; and submits to Department Head for approval.
4. Reviews Awareness Charts for assigned work area, taking the necessary correction action.
5. Checks Foremen monthly on knowledge of safety rules and regulations; keeps safety rules up to date; and enforces all safety rules and regulations.
6. Develops a workable housekeeping program, defining areas assigned to Foremen; makes daily spot checks of an assigned work area; makes weekly housekeeping inspections accompanied by Foremen, reporting results of inspections to Department Head and indicating conditions and corrective action; and maintains safety signs and bulletin boards in assigned area in clean and legible condition.
7. Develops a workable tool inspection schedule and is accountable for the availability and condition of tools; establishes standards for tool use; reviews Foremen's tool reports monthly; makes weekly spot checks of tools in assigned work area; and reports to Department Head all deviations from specifications, premature failure, or unsafe tool problems.
8. Develops a workable inspection schedule for wire rope, chains, clevises, pins, spreaders, etc., and accounts for the availability and condition of such equipment; establishes standards as to acceptable conditions; and makes weekly spot checks.
9. Develops a workable inspection schedule for powered material-handling equipment and accounts for its enforcement; assigns specific pieces of equipment to Foremen for weekly inspection for unsafe conditions; and spot checks weekly to insure compliance with standards.
10. Makes cranes available for inspection and assigns specific cranes to Foremen for biweekly inspection for housekeeping and condition.
11. Maintains identification of utilities in assigned work area according to plant standards.
12. Instructs Foremen in the recognition and elimination of pinch points and takes immediate action to eliminate or guard pinch-point situations referred by Foremen.
13. Instructs Foremen in indoctrination of new or transferred employees and reviews check list completed by Foremen.
14. Schedules employees for physical examination as required; sees that Foremen make such employees available as scheduled; and keeps Foremen advised of employees' physical limitations as reported by plant Medical Department.
15. Develops, by occupation, protective apparel required; checks on Foremen's enforcement activities; makes spot field checks to determine compliance.
16. Reports all injuries or illnesses of employees to Department Head as soon as practical; reviews Foreman's Accident Reports with Foremen; and, in case of injury, submits report to Department Head after taking corrective action and before leaving plant.
17. Makes thorough investigation of all accidents and near serious accidents occurring to employees in assigned work area; and makes personal inspection.

B. Control Functions

1. Checks safety performance for the past 24 hours; discusses with Foremen; and reports to Department Head.
2. Makes daily spot checks for housekeeping, unsafe conditions, Unsafe Acts, Violations, condition of tools, ladders, wire rope, chains, clevises, pins, etc., and adherence to safety rules and Safe Job Procedures.
3. Reviews promptly Foreman's Accident Reports.
4. Reviews promptly Foremen's check lists of indoctrinated employees.
5. Reviews Foremen's safety activities weekly to determine that minimum standards are being met.
6. Appraises the safety capabilities of Foremen monthly; makes housekeeping inspection with Department Head; reviews Foremen's safety activities, using Awareness Charts; reviews reports of powered material-handling equipment, tools, cranes, etc., and reviews Foremen's activities in Job Safety Analysis.

C. Training Functions

1. Instructs Foremen in specific safety duties and responsibilities.
2. Attends scheduled and assigned training meetings.
3. Instructs Foremen in their responsibilities for the care and treatment of sick or injured employees.

FOREMAN

I. The responsibility for the safety of assigned employees and the safe condition of the assigned work area is vested in the Foreman who is accountable to the General Foreman.

II. The minimum requirements will be met when the Foreman fulfills the administrative, control, and training functions listed below.

A. Administrative Functions

1. Each employee to receive at least one individual Safety Contact a week.
2. Each Foreman shall:
   a. Enforce Safe Job Procedures as developed by Job Safety Analyses.
   b. Report weaknesses in Job Safety Analyses as revealed by Safety Observations to General Foreman.
   c. Report jobs not covered by Safe Job Procedures.
   d. Participate in Job Safety Analysis conferences.
3. Instructs each employee in all Safe Job Procedures pertaining to assigned work, and records instruction.
4. Makes at least one Safety Observation per day, with each employee being observed twice a month.
5. Reviews accident causes as shown on Awareness Charts and directs daily safety activities to correct these causes.
6. Conducts weekly instruction of employees in Safe Job Procedures, safety rules and regulations; records instruction; and enforces all Safe Job Procedures, safety rules and regulations at all times.
7. Makes daily inspections of assigned work area and takes immediate steps to correct unsafe or unsatisfactory conditions; reports to General Foreman conditions which cannot be immediately corrected; instructs employees on housekeeping standards; and requires Maintenance or Service employees to maintain these standards while in assigned work area.
8. Instructs employees that tools are to be inspected before each use; makes daily spot checks of tool conditions; inspects each tool in assigned work area monthly; uses a check list for recording tool inspections; and submits check list to the General Foreman, noting type of defect and action taken.
9. Instructs employees in visual inspection before using wire rope, slings, chains, clevises, pins, spreaders, etc.; makes spot checks daily of such devices in service; inspects weekly each such device in assigned work area; and reports to General Foreman.
10. Requires powered mobile material-handling equipment operators to submit reports at the end of each turn; reviews reports and takes prompt corrective action; transmits reports to General Foreman with comments on action taken; and inspects such equipment weekly in assigned work area.
11. Requires crane operators to submit reports at the end of each turn; reviews reports; takes corrective action; and submits reports to General Foreman with comments and action taken. Maintenance Foremen will be assigned specific cranes for inspecting biweekly. Operating Foreman makes cranes available for maintenance inspection; requires cranemen to report crane collisions or severe contact with runway bumpers; and takes such cranes out of service until inspection is made.
12. Maintains the identification of utilities in assigned work area according to plant requirements.
13. Takes action leading to the elimination or guarding of pinch points.
14. Instructs personally each new employee in assigned work area on job safety requirements; completes check list promptly; and forwards it to General Foreman.
15. Enforces the plant Medical Department's recommendations with respect to employees' physical limitations; reports employee's apparent physical limitations to General Foreman; and requests physical examination.
16. Enforces wearing of protective apparel; makes spot checks to determine that protective apparel is being used; and makes periodic checks to appraise condition of apparel.
17. Sees that injured employee receives prompt medical attention; isolates area or shuts down equipment, as necessary; and immediately reports to the General Foreman the facts regarding employee's accident or illness and action taken. In near serious accident cases, Foreman determines cause; takes immediate steps to correct condition; and isolates area and/or shuts down equipment, as necessary. Foreman immediately reports facts and action taken to the General Foreman.
18. Makes thorough investigation of all accidents, near serious accidents, and medical cases occurring to employees in assigned work area. Immediately after the accident and before leaving plant, he prepares a complete Foreman's Accident Report for the General Foreman.

B. Control Functions

1. Checks, at the start of each turn and before relieving the on-duty Foreman, changes in operating prac-

(Continued)

FOREMAN (Continued)

tices, procedures, and conditions, noting facts related to safety which have occurred since last turn worked.

2. Makes, at the start of each turn, an immediate check to determine absentees. If plant injury is claimed, an immediate investigation is instituted and General Foreman notified.

3. Makes daily spot checks and takes the necessary corrective action regarding housekeeping, Unsafe Acts, Violations, unsafe conditions, tools, ladders, wire rope, chains, clevises, pins, spreaders, etc., and adherence to safety rules and Safe Job Procedures.

4. Reviews crane operators' inspection reports daily and takes necessary action.

5. Reviews powered material-handling equipment operators' inspection reports daily and takes necessary action.

6. Submits to General Foreman a written report monthly of inspections of tools, ladders, and wire rope, chains, clevises, pins, spreaders, etc.

C. Training Functions

1. Attends all scheduled and assigned safety training meetings.

2. Instructs personally or provides on-the-job instruction to employees in safe and efficient performance of assigned jobs.

3. Participates as assigned in Job Safety Analysis Conferences.

SUPERINTENDENT–PERSONNEL SERVICES

The responsibility for the plant's safety performance is vested in line management. The responsibility for the quality of advice and counsel provided line management by safety staff services is vested in the Superintendent–Personnel Services.

The Superintendent–Personnel Services is responsible for:

I. Establishing, developing, and administering an adequate safety organization.

II. Establishing lines of communication to assure direct personal contact between the General Supervisor–Safety and all levels of plant management.

III. Maintaining plant training activities which will develop, in each member of management, a clear-cut understanding of the safety responsibilities established by the Corporation Safety Program.

A. Administrative Functions

1. Provides an adequate safety organization.

2. Informs the General Supervisor–Safety of changes in rate of operations, movement of personnel, and other matters affecting safety performance.

3. Establishes direct contacts between the General Supervisor–Safety and all levels of plant management.

4. Encourages personal contacts between the General Supervisor–Safety, Division Superintendents, and Department Heads.

5. Determines impact of plant grievances on plant safety activities and informs the General Supervisor –Safety.

6. Provides general supervision over plant safety promotional work.

7. Provides guidance to the General Supervisor–Safety in the development of plant safety procedures.

8. Provides guidance on safety matters and in the development of plans for carrying out procedures.

9. Promotes plant adoption of all elements of the Safety Program.

10. Correlates safety objectives, employment practices, and medical services.

B. Control Functions

1. Reviews monthly report of plant safety activities.

2. Reviews monthly training activities as they relate to the Safety Program.

3. Audits the effectiveness of safety organization in administering Safety Program.

4. Audits effectiveness of plant safety organization as individuals and as an integrated group.

C. Training Functions

1. Provides individual guidance and counsel to the General Supervisor–Safety.

2. Correlates Safety Program objectives with plant training program.

3. Maintains individuals in plant safety organization who have demonstrated their ability to administer and coordinate the Safety Program.

GENERAL SUPERVISOR–SAFETY

I. The General Supervisor–Safety, upon delegation by the Superintendent–Personnel Services, advises and counsels with the Plant Manager in promoting, coordinating, and evaluating the safety activities.

A. Administrative Functions

1. Collaborates on a scheduled basis with the Plant Manager in appraising the performance of all departments.
2. Reviews with the Plant Manager the plant accident experience for the past 24 hours; and collaborates on recommendations and action to be taken by respective departments.
3. Develops recommendations for improvement of procedures, practices, and activities involved directly or indirectly in effective execution of safety functions by plant management.
4. Applies established safety procedures, practices, and related matter.
5. Provides Department Head with safety procedures, manuals, directives, and other required information relative to safety; and advises with regard to their proper administration.
6. Makes available, in the event of breakdowns or other plant emergencies, necessary services, recommendations, and preventive action as may be required.
7. Collaborates with line management in the development of required revisions to existing procedures, rules, and regulations, and submits proposed changes to Plant Manager for approval.
8. Maintains membership in necessary outside safety organizations.
9. Takes part in the review of all near serious accidents and disabling injuries and fatalities.
10. Collaborates with Plant Manager in the development and preparation of plant monthly safety meeting agendas.
11. Advises Plant Manager immediately of fatal and near serious accidents occurring in other plants; aids in the development of procedures; and takes action as may be required locally. Information attendant to such accidents is communicated promptly to Division Superintendents concerned for their action.
12. Develops and maintains an effective safety publicity program; and, when required, enlists the services of the Corporation Headquarters Safety organization.
13. Serves as a member of plant committees for special safety studies and surveys.
14. Collaborates with Division Superintendents and Department Heads to discuss problems and offer advice.
15. Consults with the plant Engineering Department on original plans; sees that all plans and specifications for new or proposed changes in processes, equipment, or methods are reviewed for compliance with safety standards before acceptance or use; and collaborates with the plant Medical Department where such plans and/or specifications pertain to health standards.
16. Establishes routines for testing and evaluating protective apparel.
17. Collaborates with department management in the administration of the physically handicapped procedure and the assignment of such employees in accordance with established practices.
18. Collaborates with the plant Engineering Department regarding contractors' safety requirements.
19. Investigates potential health hazards in collaboration with the plant Medical Department.

B. Control Functions

1. Reviews reports of plant safety activities with the Plant Manager.
2. Makes field appraisals with the Plant Manager to observe the Program's effectiveness.
3. Supervises audit of plant locations by Safety Engineers.
4. Reviews plant Awareness Charts; evaluates; advises on adverse trends; and recommends plant surveys as necessary.
5. Approves initial purchase orders for protective apparel, such as goggles, respiratory gas masks, leggings, gloves, safety belts, safety shoes, etc.
6. Reports all disabling injuries to Corporation Headquarters Safety office within 24 hours of occurrence.
7. Arranges for preparation of statistical reports of safety performance and activities and for distribution to all plant management.

C. Training Functions

1. Coordinates the training activities of Job Safety Analysis.

SAFETY ENGINEER

I. It is the responsibility of the Safety Engineer to provide to all levels of management within a division or department, all service and technical advice needed for administration of the Safety Program and to utilize controls to assure continued effective application of the Safety Program.

A. Administrative Functions

1. Serves as liaison between the General Supervisor–Safety and the departments to which he is assigned.
2. Develops and maintains knowledge of facilities, equipment, processing, products, changes of product mix, materials handling and management personnel in assigned area.
3. Maintains knowledge of Corporation Safety Program, published safety literature, Corporation and plant safety manuals, rules and regulations and other communications; advises departmental management of such applicable safety communications and of related conditions requiring attention.
4. Makes first contact at lowest level of line supervision responsible for correction; and follows up, if necessary, with higher level departmental contacts until necessary corrections are made.
5. Assists and advises departmental management in proper administration of the Safety Program including:
   a. Job Safety Analysis and Safe Job Procedures
   b. Job Safety Analysis Review Conferences
   c. Basic Training
   d. Individual Contacts
   e. Safety Contact Cards
   f. Safety Observations
   g. Employee Records
   h. Accident Investigation
   i. Awareness Charts
   j. Physical Conditions and Inspections
   k. Activity Reports
   l. Audits
6. Discusses complaints and suggestions received concerning conditions and equipment with the respective General Foremen.
7. Assists in testing and evaluating protective apparel.
8. Assists the General Supervisor–Safety in the development of:
   a. Safety publicity and promotional programs;
   b. Special safety reports for the Plant Manager or Headquarters Safety staff.

B. Control Functions

1. Reviews daily the injury experience for the past 24 hours.
2. By daily observation of physical conditions and work practices, detects lack of conformance with the Safety Program and follows up with appropriate department management.
3. Makes thorough analysis of injury and safety activity statistics and inspection reports, delineates problem areas, and makes recommendations for solutions.
4. Conducts independent audits to observe conformance with established Safety Program and to determine the effectiveness of safety activities; reports results and recommendations to Department Head.
5. Reviews protective apparel requirements with Foremen and General Foremen.
6. Reviews adequacy of safety rules and regulations with Department Head.
7. Periodically follows up the assignment of physically handicapped employees to assure compliance with the recommendations of the plant Safety and Medical staffs.

C. Training Functions

1. Promotes departmental on-the-job safety training.
2. Advises the General Supervisor–Safety concerning safety training needed in assigned area and assists in the development of such programs.

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